

CHROMOSOME COUNTS AND A NEW COMBINATION IN CLAYTONIA SECT. LIMNIA (PORTULACACEAE).—The following information has come to light as a result of studies of *Claytonia sibirica* L. and its close relatives. It is being published now because it will be of interest to others working on this group of taxa and will not be included in later, more detailed papers.

Recent studies of *Claytonia* by J. R. Swanson (Ph.D. Dissertation, Univ. California, Berkeley, 1964), J. M. Miller (Syst. Bot., in press), and C. E. Fellows (unpubl.) indicate that within such species as *C. perfoliata* Donn, *C. sibirica*, and *C. spathulata* Hook. there exist a number of evolutionary entities that are currently being loosely held together taxonomically by one to several superficial characteristics. My studies of seed, pollen, and chromosome characteristics, as well as field observations on the ecology of *C. spathulata* and *C. perfoliata*, indicate that total reliance on the degree of cauline leaf fusion to group infraspecific taxa has led in the past to partially artificial assemblages. The best clue to natural relationships among the many morphologically confusing forms comprised by *C. perfoliata* (sensu lato) and *C. spathulata* (sensu lato, including *C. gypsophiloides* F. & M.) is base chromosome number. *Claytonia perfoliata* comprises a euploid series of populations based on $x = 6$ and ranging from diploid to decaploid (Swanson, *op. cit.*; Miller, *op. cit.*). Chromosome counts, including several that are unpublished, are now known for the *C. spathulata* group, and its base number is consistently $x = 8$. Diploids, with $2n = 16$, occur (Swanson, *op. cit.*; Lewis, Ann. Missouri Bot. Gard. 54:180. 1967; Fellows, unpubl.) and these include the taxon *C. gypsophiloides* (Nilsson, Bot. Not. 119:464–468. 1966; Fellows, unpubl.); the hexaploid level ($2n = 48$) has been found in a form of *C. spathulata* common in the Pacific Northwest (Nilsson, *op. cit.*; Table 1).

Correlated with chromosome base number is seed morphology in the two species complexes. *Claytonia perfoliata* seeds have a shiny "highlight" when illuminated and are smooth, the tessellate pattern of low papillae being barely visible with a hand-lens. They have a relatively large elaisome inserted in a wide notch in the

TABLE 1. CHROMOSOME COUNTS IN CLAYTONIA. * = counts made by K. L. Chambers. Collection numbers are those of the author unless otherwise stated. Voucher for 398 is at HSC; all others are at OSC.

Claytonia rubra (How.) Tidest.

CA, Siskiyou Co., near city of Mount Shasta, 675, $n = 6$.

OR, Josephine Co., Rough-and-Ready Creek N of O'Brien, Chambers 2490, $n = 6^*$.

WA, Kittitas Co., 19 mi NW of Ellensburg, 512, $n = 6$.

Claytonia perfoliata Donn, sens. lat., excluding subsp. *viridis*.

CA, Humboldt Co., 3 mi above Freshwater, 480A and 480C, $n = 6$; Clam Beach, 398 (offspring), $n = 12$; Titlow Hill Rd., 714, $n = 18$.

CA, Mendocino Co., 4.0 mi from hwy. 101 on hwy. 128, 603, $n = 18$.

CA, Napa-Lake Co. line, on hwy. 29, 599, $n = 18$.

CA, Ventura Co., Wheeler Gorge Campground, 685 and 686, $n = 6$.

OR, Josephine Co., Rough-and-Ready Creek N of O'Brien, Chambers 2491, $n = 18^*$.

WA, Clallam Co., 0.5 mi W of Sequim, J. Miller 270, $n = 18$.

Claytonia perfoliata subsp. *viridis* (A. Davids.) Fellows

CA, Riverside Co., 1 mi N of Mountain Center, 981, $n = 12$.

CA, San Diego Co., near Pine Valley Creek, 964, $n = 12$.

CA, Ventura Co., near Canyon Creek, 687, $n = 12$.

Claytonia spathulata Hook.

OR, Wasco Co., Mayer State Park, Rowena, Chambers 2486, $n = 24^*$.

seed coat. Seeds of *C. spathulata* appear more dull-surfaced because they are evenly pebbled with minute papillae, and their elaisome is relatively much smaller than that of *C. perfoliata*. These differences are well illustrated by drawings on pages 244 and 248 in *Vascular plants of the Pacific Northwest*, part 2 (Hitchcock et al., 1964).

Plants of the *C. spathulata* group typically occupy fully open sites in sand or gravelly soil, or on mats of moss on bare rocks. Their stems and leaves are usually gray-glaucous. The habitats of *C. perfoliata* include many types of open or shaded conditions and soils ranging from dry and sandy to moist and highly organic. Especially when in shade, plants of *C. spathulata* are green or reddened with betacyanin pigments and are not glaucous. These habitual differences are variable and difficult to quantify and are less useful than seeds or chromosome number in assigning taxa to one or the other of these species complexes.

A long-recognized taxon of Southern California, which botanists have consistently associated with the *C. spathulata* group, is *C. spathulata* var. *viridis* (A. Davids.) Munz. Chromosome counts of three widely separated populations (Table 1) show that it is a tetraploid on a base of $x = 6$. These plants have a seed morphology similar to that of *C. perfoliata*, and they occur often in shaded habitats and are nonglaucous and green (as the varietal epithet implies). To indicate the natural relationship of this entity to *C. perfoliata*, I propose the following new combination:

***Claytonia perfoliata* Donn subsp. *viridis* (A. Davids.) Fellows, comb. et stat. nov.**—*Montia spathulata* var. *viridis* A. Davids., Bull. S. Calif. Acad. Sci. 5:61. 1907.—*M. exigua* var. *viridis* Jepson, Fl. Calif. 1:473. 1915.—*Claytonia exigua* var. *viridis* v. Poelln., Feddes Repert. Spec. Nov. Regni Veg. 30:306. 1932.—*Limnia viridis* Rydb., N. Amer. Fl. 21:313. 1932.—*C. spathulata* var. *viridis* Munz, Fl. S. Calif. 713. 1974. TYPE: California, San Gabriel Mountains, Big Rock Creek, pine woods, 6 Jun 1906, *Hasse & Davidson 1507*. Holotype: LAM!

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NOMENCLATORIAL NOTES ON CLAYTONIA SPATHULATA.—The protologue for *Claytonia spathulata* Dougl. ex Hook. (Fl. Bor. Amer. 1:226. tab. 74. 1832) includes citation of syntypes, "North-West coast of America. *A. Menzies, Esq.* in Herb. nostr.—In the vallies of the Rocky Mountains, common. *Douglas*." It appears that no one has yet taken the formal step of designating a lectotype for this name, although various authors have implied that one or the other of the cited collections is the "type". Robinson (in Gray, Syn. Fl. N. Amer. 1:275. 1897) said "... first coll. by *Douglas*". Rydberg (N. Amer. Fl. 21:313. 1932) gave the type locality as "Rocky Mountains [Canada]". R. S. Ferris (in Abrams, Illus. Fl. Pac. States 2:127. 1944) says simply "Canada". Hitchcock (Vas. Pl. Pac. N. W. 2:246) states, "*Menzies*, 'North-West coast of America,' is the first of two collections cited". Through the courtesy of the Royal Botanic Gardens, Kew, we have examined the type sheet of *C. spathulata* from the Hooker Herbarium (photograph, OSC), and we would like to present the following comments regarding typification of this name.